

R E M A R K S

The specification has been amended to correct the minor informalities noted by the Examiner as well as those others noted by the applicant in a review of the application.

Claims 1, 2, 5 and 6 have been amended.

Claims 1, 2 and 5 have been amended to avoid the antecedence problems noted by the Examiner.

The drawings have been amended to correct the minor defects noted by the Examiner.

The rejection of Claims 1-6 under 35 U.S.C. §112, first paragraph, is respectfully traversed. Initially, it is noted that the term "angulated" has been cancelled from claim 2.

The Examiner contends that the specification does not disclose how the passages are angulated. Reference is made to the specification in the paragraph bridging pages 5 and 6 reading as follows:

A pair of water passages CH1 and CH2 lead from the reversing or interaction chamber RC on each side of the power nozzle PN, respectively. These outlet passages or channels CH1 and CH2 are preferably smooth without any sharp directional changes and extend to intersect at a common outlet CO which has a pair of diverging sidewalls SW1 and SW2, respectively. Each outlet passage CH1 and CH2 have an upstream end beginning at the reversing chamber and a downstream end ending at the common outlet CO. Each of these outlet passages have the effect of lowering the frequency of oscillation to under 6 Hz, and in the preferred embodiment about 3 Hz or less.

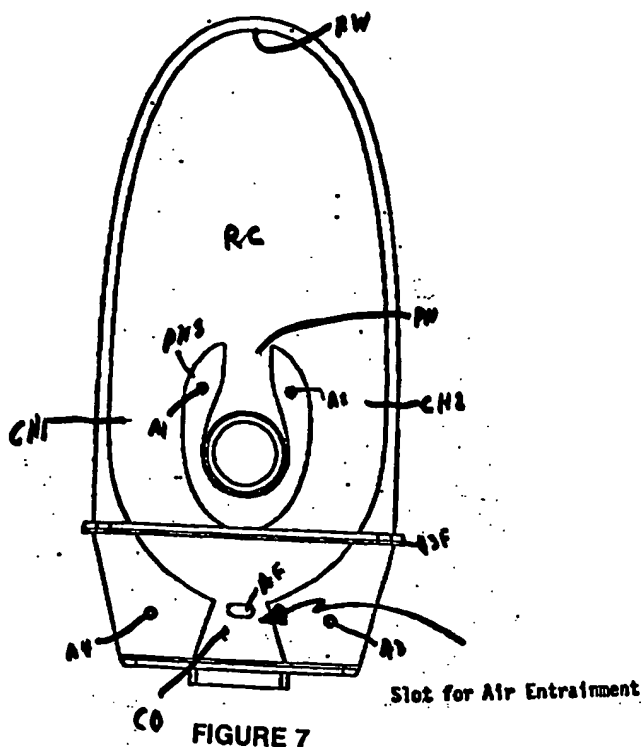


Figure 7 of the drawings is reproduced to the left hereof for convenience of reference. It will be noted that the passages CH1 and CH2 smoothly extend from the reversing chamber RC to the common outlet CO where they intersect or merge to produce a second liquid jet which is periodically swept in a common outlet to ambient water in the spa tub. Figure 7 is an actual drawing of an operative device, and hence the drawings disclose the proper angulation to achieve the objective

sought. Hence, applicants respectfully submit that the disclosure is sufficient under 35 U.S.C. §112, first paragraph, as containing subject matter which is described in the specification in such a way as to enable one skilled in the art to practice the invention defined by the claims.

Turning now to the Examiner's objection to the term "smoothly" in claims 2 and 5, reference is again made to Figure 7 of the drawings and the above quoted portion of the specification. The specification characterizes the passages or channels CH1, CH2 as being "smooth without any sharp directional changes" (emphasis added), and that is precisely what is disclosed in the drawings.

And in contrast, the same cannot be said of Bauer Patent No. 4,662,568 which provides a spray output forming chamber. The Bauer device obviously has a sharp directional change in the form of the sharp points at the ends of his power nozzle 14 bounding spray chamber 12.

Claim 6 has been amended to include the subject matter of Claim 5 and therefore should be in condition for allowance.

The rejection of Claims 1 - 5 under 35 U.S.C. §103(a) as being unpatentable over Bauer (US 4,662,568) in view of Fichter (US 3,776,460) is respectfully traversed. In the first place, the Examiner's contention that Bauer discloses a therapeutic water nozzle is not understood because Bauer never refers to or characterizes his spray nozzle as being therapeutic. Nevertheless, applicant respectfully submits that Bauer is inapplicable to the claims because Bauer is not an underwater jet device. Bauer seeks to break up the jet for spray nozzle applications by providing:

...various surface configurations within a chamber to stress the liquid flow therein whereby the liquid issues from the nozzle as individual drops of liquid in a stressed state so as to further break up into smaller droplets after leaving the nozzle.

(See Bauer Abstract, emphasis added.)

The very objective of applicants' device is to provide a underwater therapeutic massaging effect. This is not achieved in any manner, fashion or form by the provision of a device which is intended to break up into individual drops of liquid (and the Examiner has yet to explain why drops of liquid are going to be formed under water)


and the individual drops are in a stressed state "so as to further break up into smaller drops after leaving the nozzle." [Break up into smaller drops after leaving the nozzle, under water?] Clearly, the intent and purpose of the Bauer device is to break the droplets up in ambient air and not under water.

Fichter is directed to a spray nozzle using a swirl chamber in such a fashion as to periodically disrupt the whirling action and alternate spray pattern discharged through the exit port. Note that the fluidic switch in the swirl chamber of Fichter provides a conical discharge spray that oscillates rapidly between the wide angle cone pattern and the narrow angle cone pattern at an oscillating frequency of about 200 cycles per minute. (See column 1, lines 56-61.) The device is intended to provide a spray as in spray nozzle, and while it says it is useful in whirlpool baths, it does not indicate that it is useful in spa nozzles.

The structure of the Fichter device is basically unrelated to applicants' physical structure, and, as discussed above, the Bauer device is a jet break-up device for spray nozzle applications in which the idea is to provide a device which breaks the liquid jet from the nozzle into individual drops, and the individual drops are further broken up into smaller drops after leaving the nozzle. It is not clear how one would form droplets under water or why one would want to form droplets under water.

In view of the above, applicants respectfully submit that Claims 1 - 5 are patentable along with claim 6, and further and favorable action is respectfully requested.

Respectfully submitted,



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Attachment:

Version With Markings to Show Changes Made
Letter to the Official Draftsman

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In the event this paper is deemed not timely filed, the applicant hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 26-0090 along with any other additional fees which may be required with respect to this paper.



IN THE SPECIFICATION:

Page 3, the last paragraph has been corrected as follows:

-- Referring now to Figure 1, a hot tub or spa 10 is shown as being supplied with water mixed with air by one or more fluidic [oscillator] nozzle devices 11 mounted in the walls 13 of the hot tub or spa 10. It will be appreciated that in a normal conventional hot tub or spa a plurality of nozzles are judiciously scattered around the tub to provide alternating pressure points to various individuals in the hot tub. The water is circulated from one or more drains, filtered and otherwise treated prior to recirculation. --

Page 5, the first full paragraph has been amended as follows:

-- Referring to Figure 5A, the female portion [40M] 40F of the reversing chamber fluidic oscillator 40 and the male portion 40M are ultrasonically welded together using guide projections or prongs on the male member. Flanges 43F and 43M butt up against the rectangular aperture 45 in the feed ring 31 to thereby form the separator between the air chamber AC and the water chamber WC. The silhouette of the fluidic oscillator as best seen in Figure 7 incorporates a power nozzle PN supplied with water under pressure from water chamber WC through ports [PF] 40 and [PM] 41 (see Figure [4A] 5A). Reversing chamber RC has a reversing chamber wall RW. A pair of counter-rotating vortices are produced in the interaction

chamber RC, and the jet of water is transferred around these vortices towards the exit passages [P1, P2] CH1, CH2 at each side of the power nozzle, with the power nozzle structure PNS. The apertures AP1, AP2, AP3 and AP4 are for receiving projecting pins from the male portion for aligning and snapping the two oscillators halves in assembly prior to ultrasonic welding. --

IN THE CLAIMS:

Please amend Claims 1, 2, 5 and 6 as follows:

1. (Twice Amended) A therapeutic spa tub having a waterline and one or more therapeutic water nozzles for issuing jets of water into said tub, said one or more therapeutic water nozzles each comprising a housing having an inlet for receiving a flow of water under pressure, a fluidic oscillator having an oscillation chamber and a power nozzle coupled to said inlet and said oscillation chamber for projecting a first jet of water into said oscillation chamber, a common outlet, a pair of outlet passages from said oscillation chamber for issuing a pair of periodically pulsating pulses of water into said spa tub below said waterline, and an air passage in said common outlet for selectively entraining ambient air in water passing through said common outlet.

2. (Twice Amended) The therapeutic spa tub defined in Claim 1 wherein said fluidic oscillator is a reversing chamber oscillator and wherein said oscillation chamber has a reversing wall, said power nozzle being centrally located for issuing said first jet of said water toward said reversing wall, [a] said common outlet located below said waterline and a pair of liquid outlet passages leading from said reversing chamber on each side of said power nozzle, respectively, to said common outlet for carrying said periodically pulsating pulses of said water and wherein said outlet passages are smoothly extended to intersect at said common outlet to ambient and water from said liquid outlet passages merge to form a low-frequency swept jet, and said passages are [angulated relative to each other] merged to establish the sweep angle of a second liquid jet which is periodically swept in said common outlet to ambient water in said spa tub.

5. (Twice Amended) A therapeutic spa tub having a waterline and one or more therapeutic water nozzles for issuing jets of water into said tub, said water nozzles each comprising a housing having an inlet for receiving a flow of water under pressure, a fluidic oscillator having an oscillation chamber and a power nozzle coupled to said inlet and said oscillation chamber for projecting a first jet of water into said oscillation chamber and a pair of outlets from said oscillation chamber for issuing a

10 pulsating jet of water into said spa tub below said waterline, said
 fluidic oscillator is a reversing chamber oscillator and wherein
 said oscillation chamber has a reversing wall, said power nozzle
 being centrally located for issuing said first jet of said water
 toward said reversing wall, a common outlet, and said pair of
 15 outlets being constituted by a pair of liquid passages leading from
 said reversing chamber on each side of said power nozzle,
 respectively, for alternately carrying periodic pulses of said
 water and wherein said liquid passages are smoothly extended to
 intersect at said common outlet to ambient and water from said
 20 passages merge to form a low-frequency swept water jet below said
 waterline.

6. (Amended) [The invention defined in Claim 5,] A
therapeutic spa tub having a waterline and one or more therapeutic
water nozzles for issuing jets of water into said tub, said water
nozzles each comprising a housing having an inlet for receiving a
flow of water under pressure, a fluidic oscillator having an
oscillation chamber and a power nozzle coupled to said inlet and
said oscillation chamber for projecting a first jet of water into
said oscillation chamber and a pair of outlets from said
oscillation chamber for issuing a pulsating jet of water into said
spa tub below said waterline, said fluidic oscillator is a
reversing chamber oscillator and wherein said oscillation chamber

has a reversing wall, said power nozzle being centrally located for
issuing said first jet of said water toward said reversing wall, a
common outlet, and said pair of outlets being constituted by a pair
of liquid passages leading from said reversing chamber on each side
of said power nozzle, respectively, for alternately carrying
periodic pulses of said water and wherein said liquid passages are
smoothly extended to intersect at said common outlet to ambient and
water from said passages merge to form a low-frequency swept water
jet below said waterline, and wherein said nozzle has a threaded
rear housing, a feed ring having a wall defining a water chamber
surrounding said reversing chamber and an air chamber for coupling
air to said common outlet for entrainment in said swept water jet.